20ST20 "h629006T

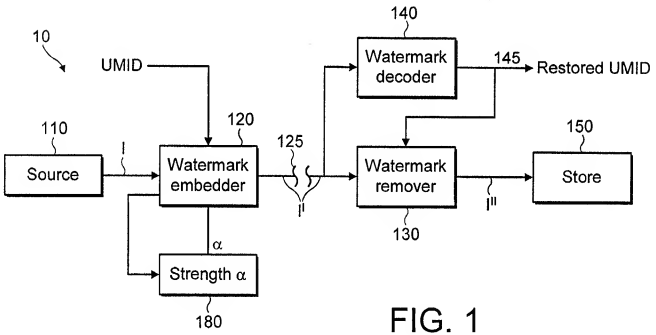

FIG. 1

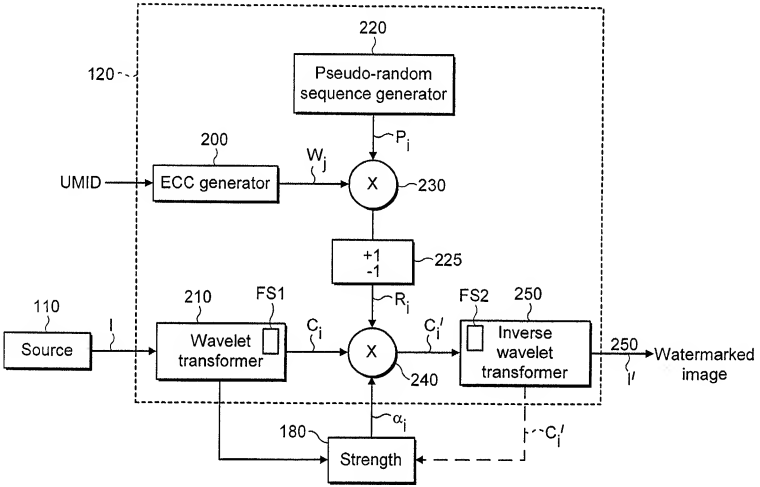
220
120
Pseudo-random sequence generator
P_i
200
W_j
UMID
ECC generator
X
230
+1
-1
225
110
210
FS1
R_i
FS2
250
Source
I
Wavelet transformer
C_i
X
C_i'
Inverse wavelet transformer
250
Watermarked image
I'
240
α_i
180
C_i'
Strength

FIG. 2

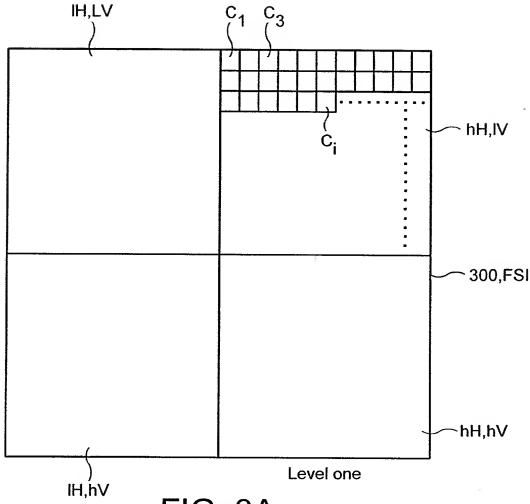

FIG. 3A

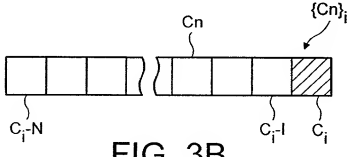

FIG. 3B

20120"h6250800T

20120094021502 1000262940

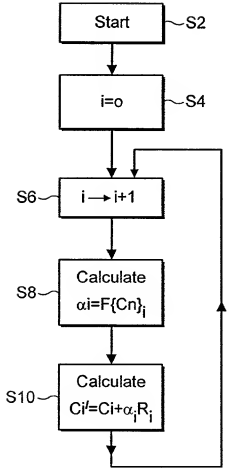

FIG. 4

2051201 4629001

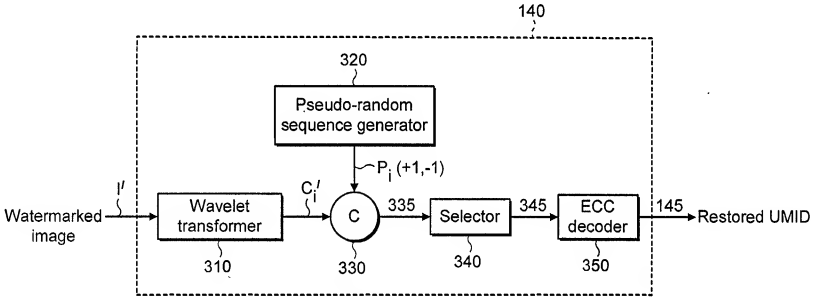

FIG. 5

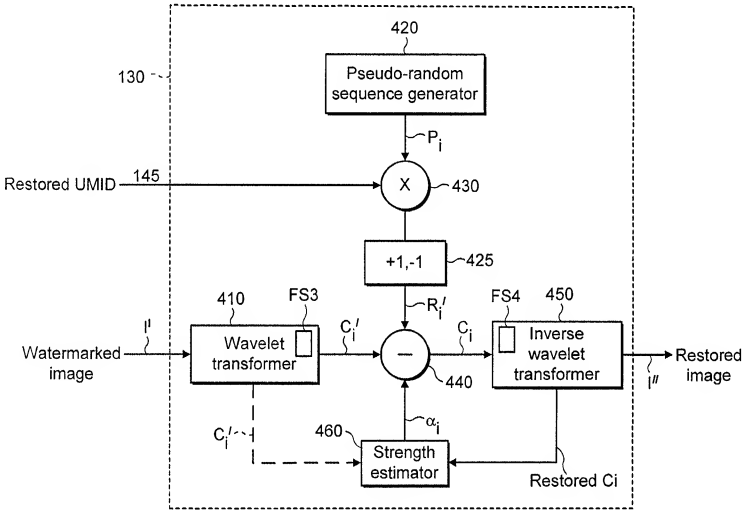
420
Pseudo-random sequence generator
130
P_i
Restored UMID
145
X
430
+1,-1
425
410
FS3
R_i'
FS4
450
I'
Watermarked image
Wavelet transformer
C_i'
C_i
Inverse wavelet transformer
Restored image
I''
440
α_i
C_i'
460
Strength estimator
Restored Ci

FIG. 6

1005294-021502

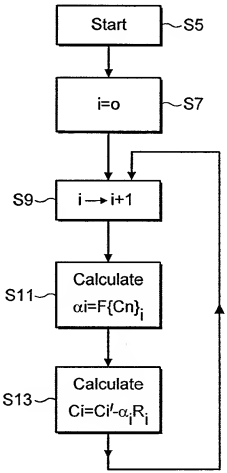

FIG. 7

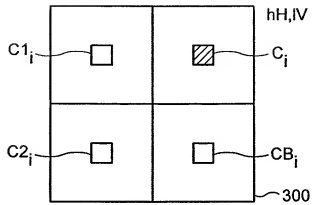

FIG. 8

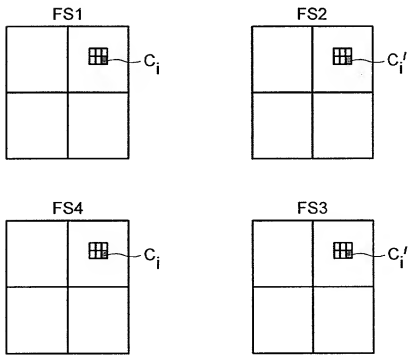

FIG. 9

10005294-021502

2051201 h6250001

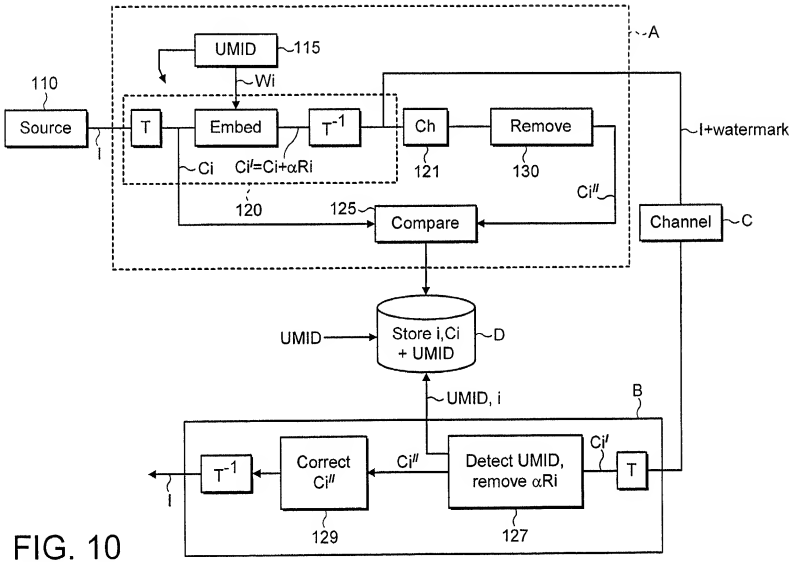

FIG. 10

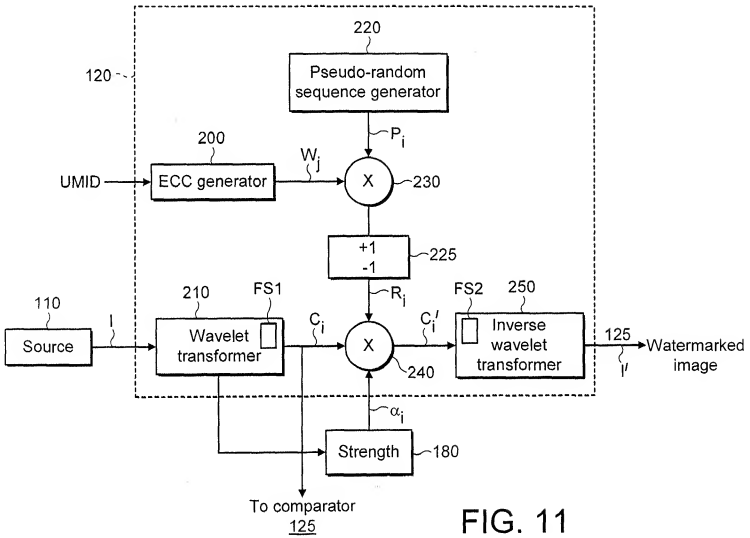
220
Pseudo-random sequence generator
120
P_i
200
W_j
UMID
ECC generator
X
230
+1
-1
225
R_i
110
210
FS1
FS2
250
I
Source
Wavelet transformer
C_i
X
C_i'
Inverse wavelet transformer
125
Watermarked image
I'
240
α_i
Strength
180
To comparator 125

FIG. 11

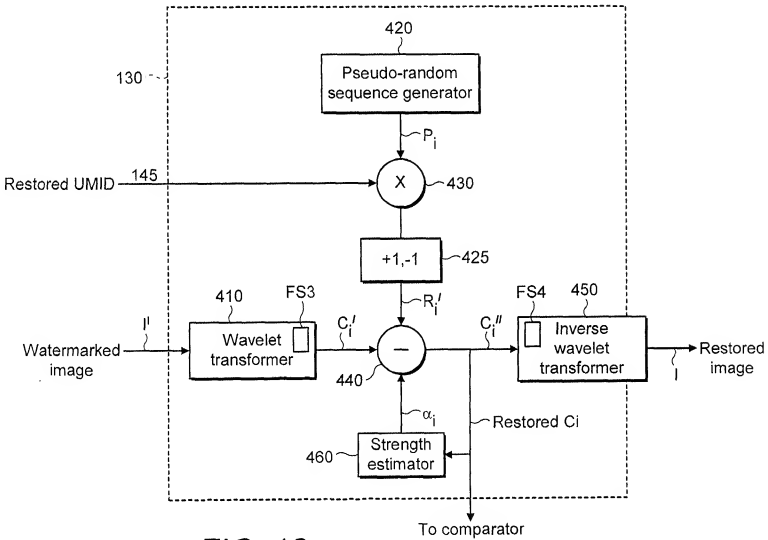
420
Pseudo-random sequence generator
130
P_i
Restored UMID
145
X
430
+1,-1
425
410
FS3
R_i'
FS4
450
I'
Watermarked image
Wavelet transformer
C_i'
C_i''
Inverse wavelet transformer
Restored image
I
440
α_i
Restored Ci
460
Strength estimator
To comparator
125

FIG. 12

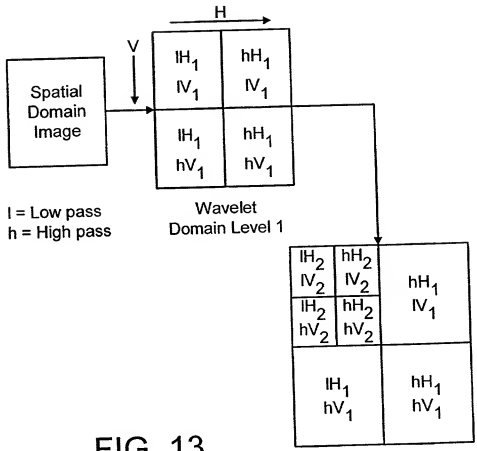

FIG. 13

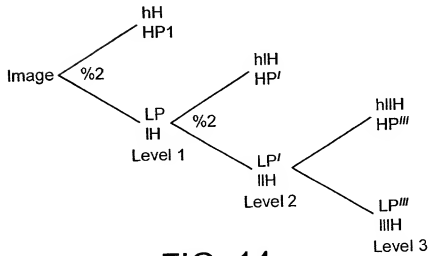

FIG. 14

20051206.0250004

2051201 "h629000T

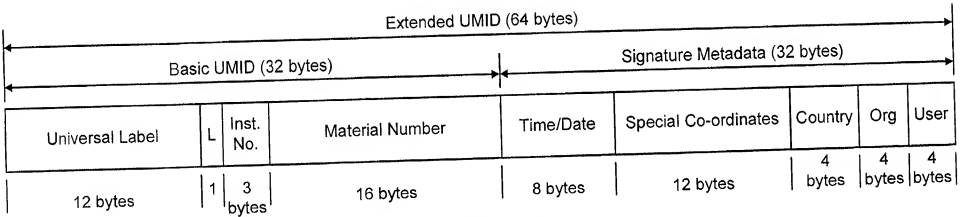

FIG. 15

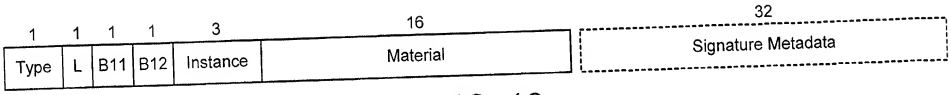

FIG. 16